

AST – ACTIVATED ASPARTATE AMINOTRANSFERASE

Principle

Intended Use The Activated Aspartate Aminotransferase assay is used for the quantitation of aspartate aminotransferase in human serum or plasma on the Alinity c system.

Clinical Significance

Both AST and alanine aminotransferase (ALT) are normally found in most body fluids, but not in urine except in instances of kidney lesions. The greatest concentrations of AST are found in heart, liver, muscle, and kidney tissues. Damage to these tissues can greatly elevate serum AST levels. AST is mostly used in the evaluation of liver disease. Elevated levels are found with acute myocardial infarction, severe angina, hepatitis, liver necrosis, cancer of the liver, alcoholism, musculoskeletal disease, recent convulsions, heat stroke, severe burns, acute pancreatitis, strenuous exercise, toxic shock syndrome, cerebral infarction, trauma, and intramuscular injection, among others. Depressed levels are seen in uremia, vitamin B deficiency, and with the administration of some drugs.

Methodology

The Activated Aspartate Aminotransferase assay is an automated clinical chemistry assay. AST present in the sample catalyzes the transfer of the amino group from L-aspartate to 2-oxoglutarate, in the presence of pyridoxal-5'-phosphate, forming oxaloacetate and L-glutamate. Oxaloacetate in the presence of NADH and malate dehydrogenase (MDH) is reduced to L-malate. In this reaction, the NADH is oxidized to NAD. The reaction is monitored by measuring the rate of decrease in absorbance at 340 nm due to the oxidation of NADH to NAD.

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Specimen

Type of Specimen	Specimen Type	Collection Vessel
	• Serum	Serum Tubes (with or without gel barrier)
	• Plasma	Collection tubes Acceptable anticoagulants are: Lithium Heparin (with or without gel barrier) Sodium Heparin EDTA

Specimen Storage and Stability

1. Tubes of blood are to be kept closed at all times and in a vertical position. It is recommended that the serum or plasma be physically separated from contact with cells within two hours from the time of collections.
2. Hemolyzed samples must not be used.
3. For accurate results, serum and plasma specimens should be free of fibrin, red blood cells, and other particulate matter. Serum specimens from patients receiving anticoagulant or thrombolytic therapy may contain fibrin due to incomplete clot formation. Ensure centrifugation is adequate to remove platelets.
4. If fibrin, red blood cells, or other particulate matter are observed, mix by low speed vortex or by inverting 10 times prior to recentrifugation.

Specimen Type	Temperature	Maximum Storage Time
Serum/ Plasma	20 to 25°C	4 days
	2 to 8°C	7 days
	-20°C	12 weeks

Sample Dilution Procedures

Serum/Plasma

Samples with an activated aspartate aminotransferase value exceeding 234 U/L are flagged with the code "> 5234 U/L" and may be diluted with the Manual Dilution Procedure.

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Manual Dilution Procedure

Dilute the sample with saline (0.85% to 0.90% NaCl). The operator must enter the dilution factor in the Specimen or Control tab of the Create Order screen. The system will use this dilution factor to automatically calculate the enzyme activity value of the sample and report the result.

Reagent

Reagent Handling

- Reagents are shipped on wet ice.
- Upon receipt, place reagent cartridges in an upright position for 8 hours before use to allow bubbles that may have formed to dissipate.
- If a reagent cartridge is dropped, place in an upright position for 1 hour before use to allow bubbles that may have formed to dissipate.
- Reagents are susceptible to the formation of foam and bubbles. Bubbles may interfere with the detection of the reagent level in the cartridge and cause insufficient reagent aspiration that may adversely affect results.

	Storage Temperature	Maximum Storage Time	Additional Storage Instructions
Unopened	2 to 8°C	Until expiration date	Store in upright position
Onboard	System Temperature	30 days	
Opened	2 to 8°C	Until expiration date	Store in upright position. Do not reuse original reagent caps or replacement caps due to the risk of contamination and the potential to compromise reagent performance.

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Calibration

Calibration Required

For instructions on performing a calibration, refer to the Alinity ci-series Operations Manual. Calibration is stable for approximately 30 days (720 hours), but is required with each change in reagent lot. Verify calibration with at least 2 levels of controls according to the established quality control requirements for your laboratory. If control results fall outside acceptable ranges, recalibration may be necessary. This assay may require recalibration after maintenance to critical parts or subsystems or after service procedures have been performed.

Quality Control

See Policy [Chemistry Quality Control Policy](#)

Sample Processing

See Policy [RIV-PPP-1199](#)

Reference Range

Test unit= U/L for all ages and both sexes.

Gender	Age Day Low	Age Day High	Age Year Low	Age year High	Ref Low	Ref High
	0	15			0	186
	15			1	0	83
			1	7	0	55
			7	12	0	41
M			12	19	0	40
F			12	19	0	33
U			12	19	0	33
M			19	250	0	35
F			19	250	0	31
U			19	250	0	31

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**Analytic
Range**

AMR Low	AMR High	CRR Low	CRR High
6	5234	6	5234

References

Abbott Alinity c Chemistry Information Sheet, 2017

Author

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Distributions

Kaiser Permanente Riverside Service Area Laboratory

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